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Academia Sinica, the country's top research organization, held its biennial Convocation of Academicians from 1-4 July in Taipei City with over 200 academicians, culminating in the announcement of the 2014 list of Academicians. This year, total of 18 new Academicians and 2 Honorary Academicians were elected.

Known as the "Oscars of Invention," the 2014 R&D 100 Awards were announced by R&D Magazine in middle of July in the USA, with Taiwan's Industrial Technology Research Institute (ITRI) again singled out for its excellence in technology development. This marks the 7th consecutive year ITRI has won these awards, with its development of eco-related "High Efficiency Calcium Looping Technology (HECLOT)" and the "In-Line Compact Thermal Analyzer (ICTA)" having garnered accolades this year.

Taiwan's Science and Technology Minister Simon Chang led a delegation including over 20 heavyweight Taiwanese scholars and experts to visit US research institutes, such as the National Science Foundation, the National Institutes of Health and the National Institute of Standards and Technology, in Washington D.C., to focus on a proposal to establish a platform for exchanges between Taiwanese and US research institutes. The delegation also met with venture capitalists in Silicon Valley to raise funds for a US\$ 100 million Taiwan-U.S. Silicon Valley Investment Fund.

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Taiwan, EU sign business incubation accord

(Taiwan Today, 01 07 2014)

Taiwan's Small and Medium Business Administration under the Ministry of Economic Affairs signed a joint incubation cooperation memorandum of understanding with the European Business and Innovation Centre Network June 27 at the 23rd EBN annual meeting in Lleida, Spain. The memorandum aims to bring together talent and capital markets to create mutually beneficial business opportunities. SMEA Director General Johnny Yeh, who led the Taiwan delegation to the EBN meeting, gave an address on Strategic Thinking for Entrepreneurship. He shared Taiwan's experiences in strategic thinking and policymaking to help entrepreneurs of the next generation. To deal with the issue of youth unemployment in Taiwan, the SMEA has promoted youth entrepreneurship acceleration policies and competitions, Yeh said. A key role is being played by university incubation centers as well as the four Start-Up Taiwan Accelerator alliances—Industrial Technology Research Institute, National Chiao Tung University, Chung Yuan Christian University and Institute for Information Industry. In response, EBN President Alvaro Simon de Blas said, "Taiwan is known for its innovative capability and flexibility. It also serves as an Asia-Pacific commerce and traffic hub." He stressed that Taiwan cannot be ignored, given rapid advances in the nation's commercial incubation and its strong economy. "With the signing of this memorandum, we will be further dedicated to the mutual formation of Taiwan-EU networking platforms to support SMEs to harness European market potential, generate more business opportunities and, most important of all, to hasten close industrial cooperation between Taiwan and Europe on the basis of reciprocity," Simon de Blas said.

<http://www.taiwantoday.tw/ct.asp?xItem=219096&ctNode=445>

Academia Sinica convocation kicks off in Taipei

(Taiwan Today, 02 07 2014)

The biennial convocation of Academia Sinica kicked off July 1 in Taipei City, attracting more than 200 academicians from home and abroad for the most important meeting of the country's top research organization. Presided over by Academia Sinica President Wong Chi-huey, the conference will focus on development goals for the state-funded organization, as well as election of new academicians, honorary academicians and council members. Other key activities during the event's four-day run include keynote speeches and panel discussions on topics spanning dementia and social injustice. A highlight of the convocation is the presentation of policy suggestions on key issues impacting Taiwan's development going forward, including climate change, health care, higher education, population, taxation and technology. One area the academicians will focus on is taxation reform. They believe this must be undertaken posthaste so as to strengthen public finance, promote stable economic growth and ensure Taiwan's sustainable development. An Academia Sinica policy paper produced for the event identified structural problems in the country's taxation system. These are the world's lowest tax burden of 12.8 percent; relatively high reliance on taxes from wages; low reliance on corporate earnings and capital gains; and rising budget deficits. The academicians urged the government to raise corporate income taxes and transactions taxes for luxury items; levy taxes on possession and transactions for real estate based on market value; and strengthen the mechanism for policing tax evasion. In response, Minister of Finance Chang Sheng-ford said the government is working on reform measures with a focus on taxing real estate transactions based on market value. Chang said the MOF is planning a seminar scheduled for later this month, seeking input from all segments of society to address hoarding in the real estate market and promote equitable taxation



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New species of fairy shrimp found on Xiaolanyu

(Taiwan Today, 08 07 2014)

A research team from Taiwan's National Museum of Marine Biology and Aquarium recently discovered the eggs of a new species of *Branchinella thailandensis* on Xiaolanyu, or Little Orchid Island. "This is the second time such a species of fairy shrimp has been discovered in Taiwan," NMMBA researcher Ju Yu-min said. "We are extremely thrilled with the find and cannot wait to launch a comprehensive study of the creature." According to Ju, the species found on Xiaolanyu is very different from the one made 10 years ago at Yangmingshan National Park in Taipei City. "It is smaller in size and the eggs are in the shape of a pyramid as opposed to being round." The eggs were



recovered from volcanic soil samples collected during the team's recent visit to the 1.75-square-kilometer island located 3 nautical miles southeast of Orchid Island off the coast of Taitung County. Upon returning to NMMBA in Pingtung County, the team searched the database of U.S.-based National Center for Biotechnology Information to help shed light on the discovery. It was found that the species on Xiaolanyu is similar to those in Queensland, Australia. "The existence of the creature dates back 200 million years ago when dinosaurs roamed the earth," Ju said. "Such durability can be attributed to the quality of its eggs, which can withstand extreme temperatures and hatch even a decade after being laid." *Branchinella thailandensis* has a lifespan of two to three months and is found in freshwater pools throughout Asia.

<http://www.taiwantoday.tw/ct.asp?xItem=219424&ctNode=445>
<http://www.chinapost.com.tw/life/discover/2014/07/08/411879/Researchers-reveal.htm>



New treatment helps relieve bone metastasis pain

(Central News Agency, 10 07 2014)

A new noninvasive treatment for bone metastasis offered at the Taipei Cancer Center has proven effective in relieving pain caused by the disorder, according to a doctor at the center. Affiliated with Taipei Medical University, the center said it began treatments back in late May using ExAblate, a device developed by Israeli company InSightec Ltd., which uses MR-guided focused ultrasound surgery technology. The treatment offers quick and lasting pain relief without radiation, said the center. Bone metastases occur when cancer cells spread from their primary site to other parts of the body. "We have given the treatment to eight cancer patients" and it has proven successful in relieving their pain, said Lee Hsin-lun, an attending physician at the center. Among the eight patients who have received the treatment is a 41-year-old woman being treated for breast cancer. She suffered bone metastasis after going through chemo treatment for two years, according to a statement released by the center to mark its cooperation with InSightec. Her condition had caused her to suffer tremendous pain in her left leg, causing a limp. But after receiving the ExAblate treatment, she was able to walk normally without relying on pain killers, the center said. Another successful case is a 59-year-old lung cancer and bone metastasis patient who has suffered so much pain in his legs that he has needed to use mobility aids. The center said the ExAblate treatment has helped relieve the pain. Bone metastases are common in cancer patients, Lee said, adding that breast, lung and prostate cancer are among the most likely to spread to the bones. Pain is the most severe symptom of bone metastases. Pain medications and palliative radiation therapy are the most common treatments prescribed, but they have limited effect, the center said.

<http://focustaiwan.tw/news/aedu/201407100030.aspx>

Taiwanese institute wins R&D 100 Awards for 7th consecutive year

(Central News Agency, 14 07 2014)

Taiwan's Industrial Technology Research Institute (ITRI) has once again won R&D 100 Awards, making it the only Taiwanese institute to have done so for the seventh consecutive year, the institute said. The Hsinchu-based institute earned the accolade with two innovative green technologies -- the "High Efficiency Calcium Looping Technology (HECLOT)" and the "In-Line Compact Thermal Analyzer (ICTA)." It was the only Taiwanese concern this year to win an award. "These two technologies not only highlight Taiwan's world-class technological capabilities in green energy R&D, but also demonstrate applications in the cement and LED industries, helping to reduce carbon and boost production efficiency," the institute said in a statement. The HECLOT technology, which has been applied at a local cement plant on a trial basis, can capture one tonne of carbon emissions per hour and use the CO₂ to cultivate microalgae. The ICTA, meanwhile, is the "most efficient thermal analyzer," according to the institute. It can be used in automated LED production lines to boost production speed and accuracy, thus lowering costs and defect rates, it added. Kaohsiung's MPI Corp. began engaging in technology transfer with the ITRI in 2013, and the technology is expected to be used for mass production this year, the statement said. Widely recognized as the "Oscars of Innovation," the U.S.-based R&D 100 Awards identify and celebrate the top technology products of the year. Since 1963, the awards have spanned industry, academia and government-sponsored research. The ITRI, established in 1973, is Taiwan's largest such institute and one of the leading high-tech research and development institutions in the world.

<http://focustaiwan.tw/news/ast/201407140022.aspx>



Taiwan-led study sheds light on dark matter research

(Taiwan Today, 16 07 2014)

A recent study by researchers from National Taiwan University and the University of the Basque Country in Spain could offer a fresh take on what is known about dark matter, according to the Taipei City-based academic institution. Conducted by Chiueh Tzi-hong and Schive Hsi-yu, both from NTU's Department of Physics, and Tom Broadhurst from the Spanish university, the study is featured on the cover of the July issue of Nature Physics. According to Chiueh, conventional cold-particle interpretation of dark matter still lacks laboratory support and struggles with the basic properties of common dwarf galaxies, which have uniform central masses and shallow density profiles. "Our study differs from previous notions of massive dark matter in arguing that extremely light dark matter, whose particle is 10-28 times lighter than the electron, makes up the majority of matter in the universe as it is incredibly dense and copious," he said. Chiueh said the team also found evidence of the intriguing connection between the cosmic dark matter and the super massive black holes found at every galaxy nucleus. "This presents a potential path to solving previously unanswered questions pertaining to the relation and influences between solitons, the medium suggested by our dark wave model that exists in each galaxy, and the [super massive black holes]." It can also solve the inconsistency problems pertaining to dwarf galaxy observations encountered by traditional studies based on massive dark matter, he added.

<http://www.taiwantoday.tw/ct.asp?xItem=219681&ctNode=445>

Taiwan's organic photovoltaic tech efficiency among world's best

(Central News Agency, 16 07 2014)

Taiwan-developed organic photovoltaic solar power technology has been improving over the past years and now boasts one of the world's best efficiency ratings, National Central University said. Local researchers have developed a dye coded CYC-B11 for transparent dye-sensitized solar cells (DSSC), said Wu Chun-guey, chairwoman of the school's Research Center for New Generation Photovoltaics. DSSCs are relatively low-cost solar cells with a high level of efficiency. The new heteroleptic ruthenium dye can boost the efficiency of converting the sun's light energy into direct-current electricity even further to over 11.5 percent, which Wu said is one of the best rates in the world. "We have seen great potential in this," she said, adding that her school has already transferred the technology to a Japanese company. Such technology can be applied to various fields, she said, citing green houses, automation and even smartphone chargers as examples.



<http://focustaiwan.tw/news/ast/201407160037.aspx>

Exposure to plasticizer increases breast cancer risk: research

(WantChinaTimes, 20 07 2014)

Research has found that over-exposure to plasticizer increases the risk of breast cancer by 1.9 times, with even higher risk for people with poor metabolism. Chen Chien-jen, vice president of Academia Sinica, the nation's highest academic organization, reported the results of the long-term research program jointly conducted by Academia Sinica, the National Health Research Institutes, National Taiwan University Hospital and other research groups. "Our research team collected urine samples from nearly 12,000 women in seven communities in Taiwan starting in 1991, and traced 128 breast cancer patients, with 251 women in a comparison group, to analyze the metabolic materials in their urine," Chen said. The results show that over-exposure can increase the breast cancer risk by 1.9 times. In the scenario of over-exposure coupled with poor metabolism, the risk is 3.4 times that of an average person. Chen said the research was conducted over a long period of time, with many samples, and is "the most convincing report to substantiate the premise that plasticizer exposure increases the breast cancer risk." In the future, the research will target endometrial cancer, ovarian cancer and lung adenocarcinoma in women for risk analysis. On why exposure to plasticizer increases the cancer risk, Chen said the medical sector has speculated that excessive doses of plasticizers entering the human body will destroy the balance of hormones, causing breast cells to become abnormal and cancerous, or it could be because plasticizers produce large amounts of oxidation during metabolism, causing gene transformation. He noted that the number of breast cancer patients has climbed in recent years, with the occurrence rate among women aged under 50 similar to that of Europe and the United



States. He also pointed out that factors related to breast cancer include excessive consumption of animal fat, late pregnancy and breastfeeding, early menstruation, as well as the exposure to environmental hormones. He said that plasticizers are all around us in our daily lives, including in toys, cables and shower curtains. In normal situations, the metabolic material is released via the kidneys in 24-48 hours, so that the risk of over-exposure is small. He suggested more water consumption and exercise, and said that women should have regular physical checkups for early detection. According to the list of the top 10 causes of death in 2013 published by the Ministry of Health and Welfare, cancer was top for the 32nd year. Among the cancer mortalities, breast cancer was ranked fourth, with the average age of death at 58 years. A total of 1,962 women died of breast cancer in 2013.

<http://www.wantchinatimes.com/news-subclass-cnt.aspx?id=20140720000050&cid=1103&MainCatID=0>

Solar-based agricultural hangar able to generate ten vegetable harvests a year

(The Liberty Times, 22 07 2014)

Taiwan's agricultural development is entering a new phase with the ability to garner 10 harvests of vegetables grown in a solar energy-based agricultural hangar built in Kaohsiung's Yanchao by General Energy Solutions Inc., a subsidiary company of Neo Solar Power, the largest solar cell producer of Taiwan. In addition to producing weather influence-free vegetables, the facility can also rake in more profits by selling the electricity it has generated to Taipower. Located on a piece of land of 175 ping (578.5 square meters) inside of Guo-an Alley, the solar-based hangar, which bears a price tag of NT\$3.5 million, which also covers its irrigation facilities, can receive a proceeds of NT\$256,750 by selling an average annual amount of electricity of 39,500 kilowatt hours to Taipower at NT\$6.5 per kilowatt hour. As for the proceeds generated by the vegetables grown there, it can be estimated by calculating the profits of around 800 to 1,000 kilograms of the plants that can be harvested from one fang (969.9 square meters) of land. As such, it is predicted that such a structure can pay for itself in between 10 and 12 years. With steel-framed reinforced construction, the solar-based structure is able to resist winds of over 200 kilometers per hour, allowing the vegetables grown there to remain unaffected in the city's first licensed agricultural hangar. Also, as its light penetration rate has risen to 63 % from 50 %, many high-value melon-based vegetables

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=344101&CtNode=9>

NARLabs launches database to enhance patent deployment

(The China Post, 23 07 2014)

Taiwan's National Applied Research Laboratories (NARLabs) officially launched an online database that profiles thousands of patents and related reports, hoping to give Taiwanese companies a patent deployment edge. The Innovation Knowledge platform, the largest of its kind in Taiwan, solely focuses on communication patent studies and provides translated and interpreted versions of 3,200 patents in the United States and over 1,000 patent infringement case studies, according to NARLabs. It intends to add another 3,000 translated patents a year. Most of Taiwan's companies are small- and medium-sized enterprises, and they often do not have the manpower or financial muscle to do in-depth patent searches at present, according to NARLabs. Presenting patents in an easily accessible way in a language the companies can understand will help them avoid patent infringement when developing new products and get ideas when applying for one, the organization said. Taiwan may be a country of invention, but it suffers a deficit in technology patent trade, NARLabs said. Though every million Taiwanese owned 355.7 patents in the U.S. in 2012, the highest ratio in the world, domestic companies received only NT\$30 billion (US\$1 billion) in licensing fees in 2012 while paying as much as NT\$115 billion in patent rights fees, NARLabs said.

<http://www.chinapost.com.tw/taiwan/national/national-news/2014/07/23/413021/NARLabs-launches.htm>

Taiwan minister seeks to build tech research platform with U.S.

(Central News Agency, 26 07 2014)

Science and Technology Minister Simon Chang flew to New York to embark on a tour aimed at reviving high-level science and technology exchanges with the United States that have not be held for several years. For three days starting Monday, Chang and more than 20 heavyweight Taiwanese scholars and experts will hold talks with leading U.S. research institutes, including the National Science Foundation, the National Institutes of Health and the National Institute of Standards and Technology, in Washington D.C., Chang told CNA. The talks will focus on a proposal to establish a platform for exchanges between Taiwanese and U.S. research institutes, he said, noting that the two sides will also exchange views on issues in the fields of natural science, earth science and health care and medicine. Chang said Taiwan and the United States have maintained close cooperative relations in the field of climate research, and the links eventually turned Taiwan into an important platform for typhoon research in the Asia-Pacific region. Some mutual academic exchanges between the two countries in other fields, however, "have



turned cold," the official said. "We did not try to reheat them until recently," Chang said, referring to the proposal to establish a platform for Taiwan-U.S. technology research. Among the Taiwanese scholars and experts who will attend the meetings in Washington D.C. are National Taiwan University President Yang Pan-chyr and Academia Sinica academicians Andrew Wang and Ho Ing-kan. After the event, Chang and the Taiwanese scholars will head to Silicon Valley on the west coast, where they will meet venture capitalists there to try and raise funds for a US\$100 million Taiwan-U.S. Silicon Valley Investment Fund. Chang explained that Taiwan's government may put up as much as half of the capital for the investment fund in the hope of reconnecting Taiwan with Silicon Valley.

<http://focustaiwan.tw/news/aipl/201407270017.aspx>



NHRI sees int'l breakthrough in cancer research

(China Post, 27 07 2014)

The National Health Research Institutes (NHRI) released their latest research findings, which have been hailed as an international breakthrough in cancer research. The NHRI revealed that they have discovered and mapped the ASPM DNA strand, which serves as the main factor that dictates the metastasis of gland cancers. As proven with animal trials, the NHRI stated that through the suppression of the ASPM, the growth of activity and the number of cancer stem cells (CSCs) could also be restrained. The restraining of CSC activity and growth could completely halt the growth and spread of tumors and has since been observed to be effective in combating gland related cancers such as pancreatic cancer, breast cancer and prostate cancer. The discovery was the result of a four-year effort by a research team at NHRI's National Institute of Cancer Research. Led by associate investigator and attending physician Kelvin Tsai, the discovery has been hailed as an international breakthrough from Taiwan. Aside from resection through early discovery, most gland cancer tumors are not curable nor the tumors surgically removable, said Tsai. Not only is molecularly targeted therapy effective in only a few certain cases, chemotherapy and radiation therapy have are recorded to have a treatment response rate of only one in three. The efficiency of the treatment is also relatively short, with high rates of recurrence, said Tsai. However, animal trials have proven that through control over the ASPM DNA stand, tumors will no longer spread nor experience growth. The control will also eradicate the possibility of metastasis without the toxic damage the body suffers under chemotherapy. In the case of pancreatic cancer, the only effective clinical medication has been proven to prolong a patient's life for just two weeks, said Tsai. But through treatment with ASPM, pancreatic tumors could be completely suppressed without the toxic side effects from chemo. Tsai is reportedly in the process of conducting large scale pre-clinical trial research in hopes of developing new molecularly targeted therapy drugs against CSCs. Aside from molecularly targeted therapy medications, the research team is also developing molecular diagnosis methods centered on ASPM. The method could evaluate the progress of tumor differentiation and tumor activity in gland related CSCs, which could accurately assess the recurrence and survival rates of gland cancer patients. The National Institute of Cancer Research of the NHRI has stated that following the global patenting of the research results, the institute is currently seeking cooperation with foreign and local Biotech companies and pharmaceutical cooperation to develop the ASPM medications and molecular diagnosis methods. However, as the development of new drugs is always a long process, it will be ten years before developments are completed and available to the world.

<http://www.chinapost.com.tw/taiwan/national/national-news/2014/07/27/413344/NHRI-sees.htm>